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IDENTIFIERS Money; *Numeracy; *Time Telling

ABSTRACT

This skills pack is intended to assist numeracy tutors working with adults needing help with basic arithmetic, time telling, and money concept skills. The following materials are included: money worksheets (dealing with British currency); worksheets introducing subtraction and the various phrases used to express the difference between two numbers; a series of graded worksheets offering reinforcement of the multiplication tables and number bonds up to 100; multiplication and division puzzles (including answer sheets); a 24-hour clock and personal time table; fraction worksheets that use pictorial examples to concentrate on addition and multiplication; activities introducing the concept of percentage; worksheets on equivalent fractions, decimals, and percentages; a dominoes game that reinforces equivalent fractions, decimals, and percentages; and a series of activities dealing with percentages and money. (MN)

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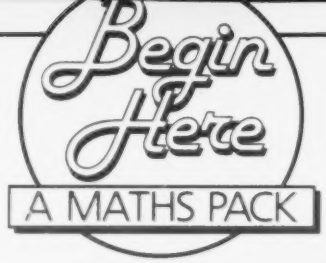
Begin Here

A MATHS PACK

Material from the Merseyside and Cheshire Numeracy Lift-Off Project

Foreword



"Begin Here" was produced as part of the Numeracy Lift Off Project in Merseyside and Cheshire sponsored by ALBSU during 1982/83. The overall aim of the Project was to achieve a concentrated thrust in the development of materials and good practice in the region largely through the involvement of numeracy practitioners working in small groups.

ALBSU believes that "Begin Here" is worthy of much wider distribution and has, therefore, published it in order that it is available throughout England and Wales. Furthermore, we hope that other publishers will take advantage of the valuable work carried out in Merseyside and Cheshire and similarly publish some of the material produced.

My thanks are due to all those involved in producing the material, to Ros Penny, the Project Co-ordinator and to Pamela Jones at ALBSU who co-ordinated this publication.

Alan Wells
Director
ALBSU

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Contents

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a. Money Worksheets
Cardboard money (available from various sources including E.J. Arnold, Customer Service Dept., Lockwood Distribution Centre, Parkside Lane, Leeds LS11 5TD, telephone number 0532 772112, or real money may be used.

Students must make up the required totals by adding the correct number of coins. They may either use money or write coin values in the squares provided.

b. Subraction Worksheets
These introduce the expression 'difference between'. Instruction and vocabulary are fairly basic but help from the tutor will probably be needed.

c. Match the Pairs, Sum, ×, ÷, finders
This is a series of graded worksheets offering reinforcement of tables up to 10 x 10 and number bonds up to 100. Use with students who need constant practice and repetition.

d. Multiplication and Division Puzzles
The large × and ÷ work sheets produced at the workshop have been reduced to a postable size. The answer sheet must be cut into squares and mixed up. The student then covers each sum on the puzzle sheet with the appropriate answer. A check sheet is provided. There are 3 sheets on each puzzle — the puzzle itself — the answers to cut up — the answer sheet.

e. 24 hour clock and Personal Time Table
The inserted A3 sheet should be used with the sheet on page 39 and Personal Timetable.

f. Fractions
These are introduced from the beginning, using pictorial examples and concentrate on addition and multiplication.

g. Percentages
An introduction to the concept of percentage i.e. 'out of 100'.

h. Equivalent Fractions, Decimals and Percentages
Pictorial examples are included in the worksheets and there is a check list of the most usual equivalent fractions, decimals and percentages.

i. Equivalent Fraction, Decimal and Percentage Dominoes
These are a series of 'dominoes' which are on two levels of difficulty. The game is played in the same way as conventional dominoes.

j. Percentages and Money
This includes discount and sales such as '15% off'.

Introduction

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Begin Here was produced by numeracy tutors involved in the Merseyside and Cheshire Numeracy Lift-Off Project sponsored by ALBSU. The worksheets in this pack are designed for immediate use. The puzzles and games, printed on card, may be cut out and used as they are or made more durable by covering with transparent self-adhesive film.

The pack is an attempt to help solve some common problems found in the teaching of adult numeracy. Most of the ideas were conceived during workshops and have been developed by the group after trials and evaluations.

Begin Here is intended to provide not only ready made materials but also ideas and suggestions which can be easily adapted to suit the specific needs of individual students of varied ability. Do please adapt, where necessary, to make the materials relevant to the needs of your students.

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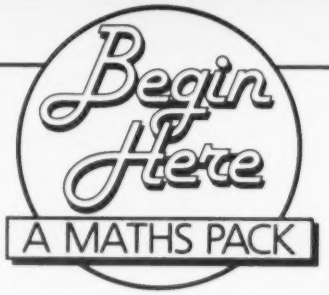
Level 1



This level is essentially concerned with the four rules using number bonds up to 100, plus money and time work at a basic level.

a. Money Worksheets

Cardboard money (available from various sources including E.J. Arnold, Customer Service Dept., Lockwood Distribution Centre, Parkside Lane, Leeds LS11 5TD, telephone number 0532 772112), or real money can be used.

Students must make up the required totals by adding the correct number of coins. They may either use money or write coin values in the squares provided.

b. Subtraction Worksheets

These introduce the expression "difference between". Instruction and vocabulary are fairly basic but help from the tutor will probably be needed.

c. Match the Pairs, Sum, ×, ÷, finders

This is a series of graded worksheets offering reinforcement of tables up to 10 x 10 and number bonds up to 100. Use with students who need constant practice and repetition.

d. Multiplication and Divisional Puzzles

The large × and ÷ games produced at the Workshop have been reduced in size. The answer sheet must be cut into squares and mixed up. The student then covers each sum on the puzzle sheet with the appropriate answer. A check sheet is provided.

e. 24 hour clock and Personal Time Table

The inserted A3 sheet should be used with the sheet on page 39

Make 15p

Put a coin in each square to make up to 15p.

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Make 20p

Put a coin in each square to make up to 20p.

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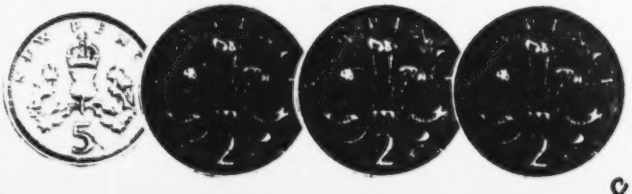

Make 25p

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Put a coin in each square to make up to 25p.

Make 35p

Put a coin in each square to make up to 35p.

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What is the difference?

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What is the difference between?

3 **2** The difference is **1**

What is the difference between

2 **3** The difference is **1**

Try these yourself

What is the difference between

★
★ ★
★ and ★ The difference is .....
★

4 **2** The difference is .....

What is the difference between **5** and **7** .....

What is the difference between **9** and **2** .....

What is the difference between **4** and **7** .....

What is the difference between **6** and **9** .....

What is the difference between **2** and **8** .....

What is the difference between **5** and **5** .....

So what does 'the difference between' mean?

It means .....

Take Away 1

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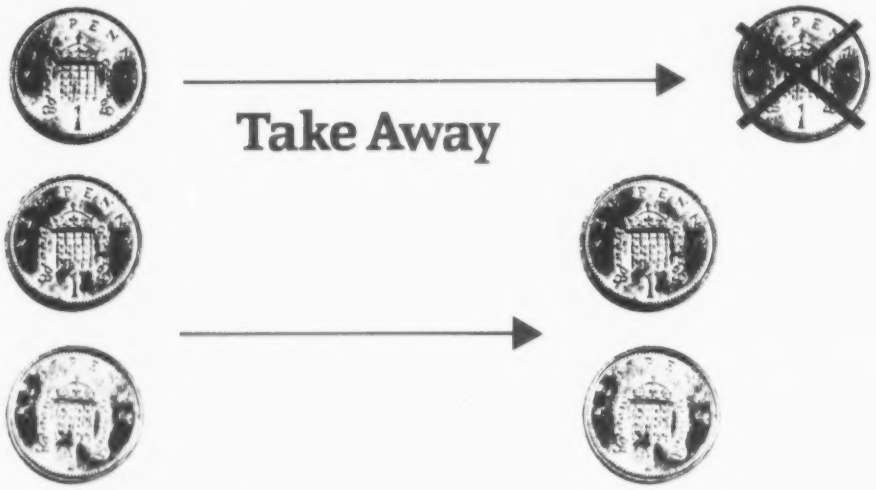
The difference between means take away the small number from the bigger number.

How do we take away?

3 take away **1**



3 take away **1** leaves **2**

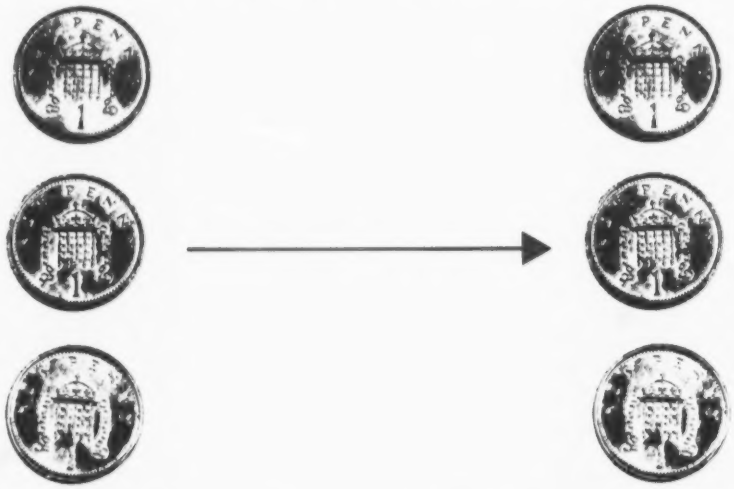
3 — **1** leaves **2**

7 — **3** leaves **4**

8 — **5** leaves **3**

BE CAREFUL

If you take **0** (nothing) away it stays the same



3 take away **0** leaves **3**

Take Away 2

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You can write **8** take away **5** is **3** like this

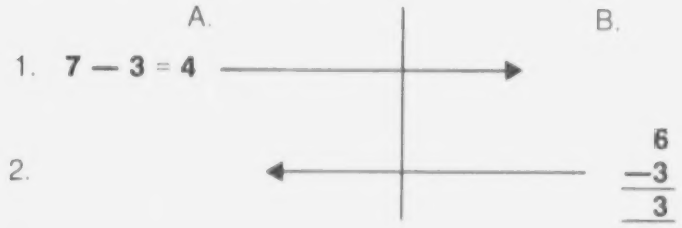
A. **8 — 5 = 3**

or like this B.

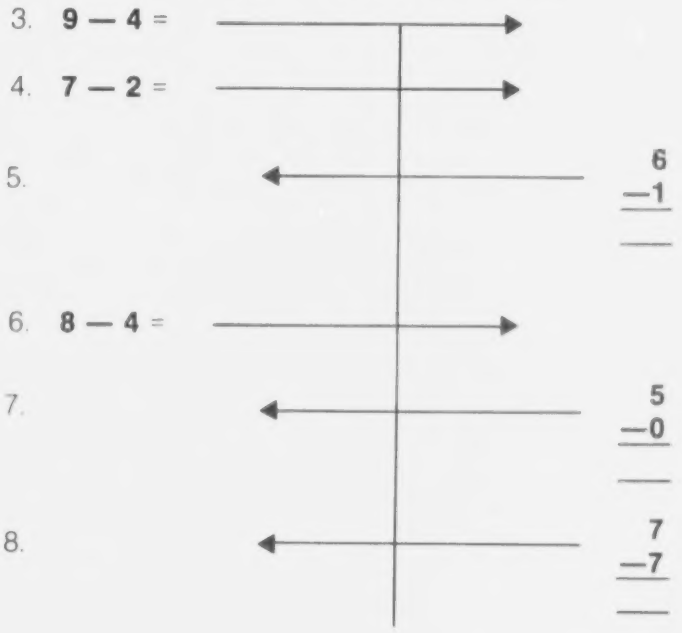
$$\begin{array}{r} 8 \\ -5 \\ \hline 3 \\ \hline \end{array}$$

They are both right

Write the sum the other way



Now change sides and fill in the answer



Match the Pairs

Which sums give the same answer?

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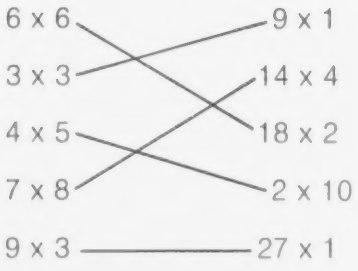
Example:



		3 x 4	15 x 2
		5 x 6	10 x 4
		6 x 8	21 x 3
		8 x 5	2 x 6
		9 x 7	4 x 12

2 x 10	5 x 4	9 x 2	30 x 3
9 x 8	14 x 2	10 x 9	15 x 3
6 x 9	6 x 5	8 x 4	3 x 6
7 x 4	12 x 6	5 x 9	5 x 7
10 x 3	18 x 3	7 x 5	16 x 2

1 x 9	6 x 6	3 x 7	2 x 3
9 x 4	9 x 2	6 x 1	3 x 4
6 x 3	5 x 16	6 x 2	2 x 5
8 x 1	3 x 3	3 x 5	7 x 3
10 x 8	2 x 4	10 x 1	15 x 1

Match the Pairs

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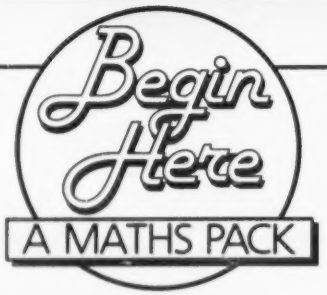
7 x 9	2 x 2	8 x 6	3 x 5
8 x 10	2 x 40	8 x 2	14 x 1
4 x 1	7 x 5	5 x 3	10 x 4
5 x 10	9 x 7	2 x 7	4 x 12
5 x 7	25 x 2	5 x 8	4 x 4

4 x 7	12 x 3	7 x 7	5 x 4
8 x 3	2 x 9	3 x 9	4 x 6
4 x 9	5 x 12	2 x 10	16 x 2
3 x 6	14 x 2	8 x 3	49 x 1
10 x 6	6 x 4	4 x 8	9 x 3

9 x 6	10 x 2	6 x 10	5 x 12
5 x 4	2 x 25	2 x 8	8 x 5
10 x 5	4 x 16	4 x 10	25 x 1
8 x 8	27 x 2	5 x 5	4 x 4
6 x 7	7 x 6	10 x 7	7 x 10

Match the Pairs

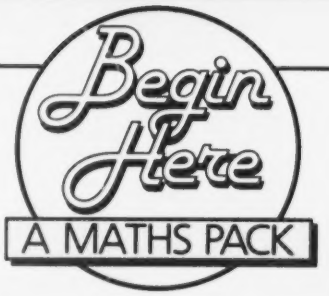


6 x 6	54 ÷ 6	3 x 4	20 + 20
3 x 3	30 - 10	5 x 6	12 + 36
4 x 5	22 + 5	6 x 8	18 - 6
7 x 8	30 + 6	8 x 5	21 + 42
9 x 3	60 - 4	9 x 7	20 + 10

2 x 10	56 ÷ 2	9 x 2	40 + 50
9 x 8	60 ÷ 2	10 x 9	90 ÷ 2
6 x 9	25 - 5	8 x 4	36 ÷ 2
7 x 4	40 + 32	5 x 9	15 + 20
10 x 3	60 - 6	7 x 5	64 ÷ 2

4 x 7	48 ÷ 2	7 x 7	50 - 23
8 x 3	72 ÷ 2	3 x 9	40 ÷ 2
4 x 9	30 - 12	2 x 10	48 ÷ 2
3 x 6	40 - 12	8 x 3	50 - 1
10 x 6	100 - 40	4 x 8	40 - 8

Match the Pairs

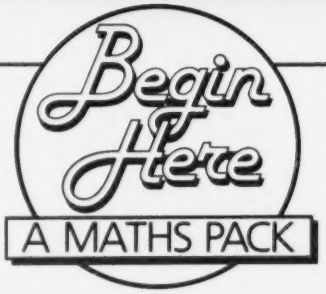


9 x 6	100 - 46	6 x 10	32 ÷ 2
5 x 4	40 + 24	2 x 8	45 - 5
10 x 5	50 - 8	4 x 10	40 + 20
8 x 8	15 + 5	5 x 5	30 + 40
6 x 7	100 ÷ 2	10 x 7	50 ÷ 2

10 x 4	18 - 6	2 x 3	18 ÷ 3
4 x 1	40 + 30	4 x 6	48 ÷ 2
3 x 8	50 - 10	6 x 5	45 + 45
2 x 6	12 + 12	9 x 10	60 - 4
7 x 10	48 ÷ 12	8 x 7	90 ÷ 3

2 x 4	30 - 6	1 x 5	30 ÷ 3
4 x 6	90 - 9	2 x 5	27 ÷ 3
10 x 10	48 ÷ 6	3 x 1	25 ÷ 5
9 x 9	50 + 50	1 x 9	24 ÷ 12
7 x 1	49 ÷ 7	1 x 2	29 ÷ 9

Match the Pairs

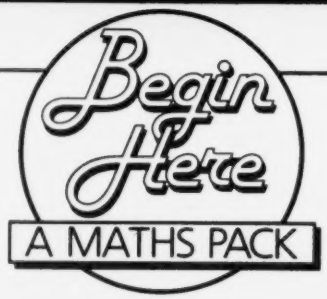


1 x 9	11 + 7	3 x 7	36 ÷ 6
9 x 4	19 - 11	6 x 1	8 + 4
6 x 3	17 - 8	6 x 2	9 + 12
8 x 1	50 + 30	3 x 5	40 ÷ 4
10 x 8	16 + 20	10 x 1	21 - 6

7 x 9	36 ÷ 9	8 x 6	29 - 13
8 x 10	42 - 7	8 x 2	75 ÷ 5
4 x 1	20 + 43	5 x 3	22 + 18
5 x 10	110 - 30	2 x 7	16 + 32
5 x 7	75 - 25	5 x 8	21 - 7

Make up your own

Multiplication Finder

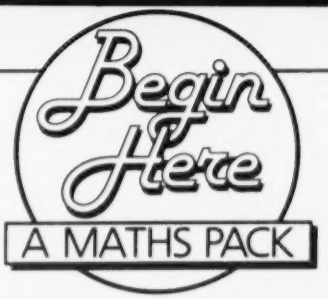


Put a circle round the sums that give these answers

Example:

20 =	5 x 4	9 x 2	10 x 2	6 x 3
20	9 x 2	4 x 5	5 x 4	10 x 2
18	6 x 4	3 x 6	9 x 2	5 x 3
24	6 x 4	2 x 12	3 x 8	3 x 6
12	3 x 4	5 x 3	2 x 6	6 x 2
22	2 x 11	11 x 2	3 x 7	10 x 2
9	3 x 4	3 x 3	5 x 2	4 x 5
25	3 x 8	5 x 5	25 x 1	25 x 0
15	5 x 3	6 x 3	2 x 7	13 x 3
28	7 x 4	3 x 8	5 x 7	3 x 9
8	4 x 2	8 x 1	1 x 8	2 x 4
24	6 x 4	4 x 6	12 x 2	2 x 12

Multiplication Finder



Put a circle round the sums that give these answers

Example:

50 =	5 x 10	25 x 2	12 x 4	6 x 8
48	12 x 4	6 x 8	8 x 6	4 x 12
36	3 x 12	6 x 6	7 x 5	10 x 3
45	4 x 11	9 x 5	10 x 4	7 x 5
35	6 x 6	3 x 10	7 x 6	7 x 5
49	7 x 9	7 x 7	8 x 8	11 x 4
36	4 x 9	12 x 3	6 x 6	18 x 2
42	21 x 2	6 x 7	4 x 11	10 x 4
32	4 x 8	3 x 10	7 x 5	6 x 6
40	5 x 6	5 x 8	8 x 5	4 x 10
34	7 x 5	3 x 8	17 x 2	4 x 8
55	7 x 9	9 x 7	11 x 5	8 x 8

Multiplication Finder

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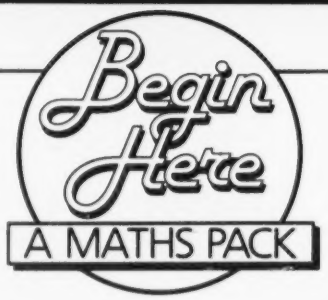
Put a circle round the sums that give these answers

Example:

70 =	10 x 7	14 x 5	11 x 6	98 x 2
64	11 x 6	9 x 7	8 x 8	16 x 4
56	28 x 2	13 x 3	8 x 7	7 x 8
63	7 x 9	9 x 7	6 x 11	8 x 8
75	15 x 5	9 x 8	7 x 11	14 x 6
66	11 x 6	9 x 7	6 x 11	8 x 8
54	5 x 9	6 x 9	11 x 5	11 x 4
56	9 x 6	11 x 5	6 x 6	7 x 8
52	5 x 11	4 x 13	10 x 5	2 x 26
60	7 x 9	5 x 12	8 x 7	9 x 8
56	7 x 8	5 x 11	6 x 12	9 x 7
77	9 x 8	11 x 7	8 x 8	16 x 4

Multiplication Finder

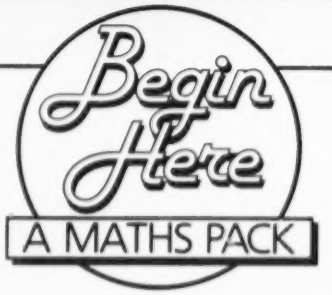


Put a circle round the sums that give these answers

Example:

100	50 x 3	2 x 50	9 x 9	10 x 10
99	11 x 9	10 x 9	12 x 8	13 x 9
88	9 x 13	7 x 12	9 x 9	11 x 8
96	13 x 9	12 x 8	9 x 11	10 x 9
84	21 x 4	7 x 12	6 x 14	9 x 8
95	5 x 19	9 x 8	7 x 14	10 x 13
85	7 x 12	9 x 9	17 x 5	13 x 5
90	9 x 10	45 x 2	3 x 30	15 x 6
82	4 x 11	41 x 2	82 x 1	82 x 0
88	22 x 4	8 x 11	9 x 9	9 x 19
64	8 x 8	6 x 11	5 x 9	13 x 7
76	11 x 7	38 x 2	4 x 19	9 x 8

Division Finder



Put a circle round the sums that give these answers

Example:

5	25 ÷ 5	27 ÷ 9	40 ÷ 5	20 ÷ 4
3	12 ÷ 3	15 ÷ 5	21 ÷ 7	3 ÷ 1
7	35 ÷ 5	49 ÷ 7	24 ÷ 4	63 ÷ 9
2	8 ÷ 4	15 ÷ 3	24 ÷ 12	6 ÷ 2
6	30 ÷ 6	48 ÷ 8	18 ÷ 3	40 ÷ 5
4	16 ÷ 4	24 ÷ 8	36 ÷ 9	40 ÷ 10
8	48 ÷ 8	56 ÷ 7	36 ÷ 6	54 ÷ 9
1	8 ÷ 8	10 ÷ 5	2 ÷ 1	3 ÷ 3
9	63 ÷ 7	81 ÷ 9	27 ÷ 3	54 ÷ 6
5	40 ÷ 8	30 ÷ 5	15 ÷ 3	36 ÷ 6
5	45 ÷ 9	36 ÷ 6	35 ÷ 7	48 ÷ 8
3	24 ÷ 6	27 ÷ 9	12 ÷ 4	6 ÷ 2
6	36 ÷ 6	18 ÷ 2	54 ÷ 8	42 ÷ 6
4	20 ÷ 4	36 ÷ 9	27 ÷ 6	32 ÷ 5
3	18 ÷ 6	35 ÷ 5	16 ÷ 4	20 ÷ 5

Sum Finder

Put a ring round the sums that give these answers

Example:

10 =	5 x 2	0 + 3	13 - 3	19 - 2
8	2 x 4	10 - 3	16 ÷ 2	18 - 8
12	2 x 6	3 x 4	14 - 2	9 + 3
4	9 - 3	12 ÷ 3	12 x 3	4 x 2
19	9 + 8	2 x 9	21 - 2	16 + 3
7	4 + 4	14 ÷ 2	4 + 3	10 - 3
13	6 + 6	6 + 7	7 x 2	16 - 3
2	1x 2	6 ÷ 2	8 - 4	4 ÷ 2
18	36 ÷ 2	9 + 8	1 + 8	21 - 2
5	2 + 3	15 ÷ 3	10 ÷ 2	6 + 1
15	12 + 6	5 x 3	4 + 11	3 + 6
21	43 ÷ 2	3 x 7	28 - 7	9 + 11

Sum Finder

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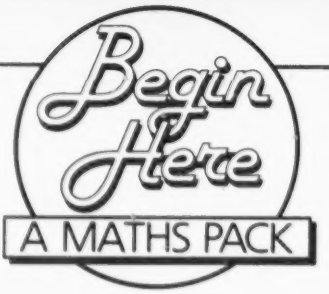
Put a ring round the sums that give these answers

Example:

50 =	25 + 15	25 x 2	5 x 10	80 - 20
48	12 x 4	4 + 8	6 x 8	51 + 4
95	70 + 15	105 - 15	60 + 45	5 x 19
49	7 + 7	7 x 7	7 ÷ 7	7 - 7
90	40 + 50	35 x 2	40 + 30	15 x 6
35	40 - 5	7 x 5	39 - 6	25 + 15
93	31 x 3	100 - 7	186 ÷ 2	100 - 6
39	4 x 9	33 + 6	36 + 3	45 - 6
99	32 x 3	101 - 2	198 ÷ 9	36 + 66
32	16 x 2	6 x 6	18 x 2	10 - 6
27	3 x 9	30 - 4	54 ÷ 2	30 - 3
24	3 x 8	12 x 2	6 x 4	30 - 6

Multiplication Puzzle 1

This sheet represents the puzzle board



2 x 1	1 x 4	3x10	3 x 3	1 x 5
2 x 9	4 x 1	1 x 7	2 x 2	3 x 9
2 x 7	3 x 1	4 x 2	1 x 8	4 x 8
3 x 2	1 x 6	4 x 5	3 x 4	1 x 1
2 x 3	4 x 9	3 x 8	2 x 4	3 x 6
2 x 6	4 x 3	3 x 7	4x10	1 x 2
4 x 7	2x10	1 x 3	4 x 4	1x10
2 x 8	3 x 5	4 x 6	2 x 5	1 x 9

Multiplication Puzzle 1

Answer Sheet 1 — Cut into Squares

Begin Here
A MATHS PACK

2	4	30	9	5
18	4	7	4	27
14	3	8	8	32
6	6	20	12	1
6	36	24	8	18
12	12	21	40	2
28	20	3	16	10
16	15	24	10	9

This sheet, cut into squares, is used so that each answer square is placed over the correct part, e.g. **18** is placed over **2 x 9**

22 27

Multiplication Puzzle 1

Answer Check Sheet 1

Begin Here
A MATHS PACK

2	4	30	9	5
18	4	7	4	27
14	3	8	8	32
6	6	20	12	1
6	36	24	8	18
12	12	21	40	2
28	20	3	16	10
16	15	24	10	9

This sheet is matched with the puzzle board when each of the squares on the board have been covered by the answer square

Multiplication Puzzle 2

This sheet represents the puzzle board

Begin Here
A MATHS PACK

6 x 9	6 x 1	5 x 4	6 x 7	6 x 3
5 x 3	5 x 2	7 x 5	6 x 2	7 x 6
5 x 8	6 x 8	6 x 6	5 x 9	7 x 8
5 x 1	7 x 4	6 x 4	5 x 5	7 x 1
6 x 5	7 x 10	5 x 10	7 x 3	7 x 2
5 x 7	7 x 9	6 x 10	7 x 7	5 x 6

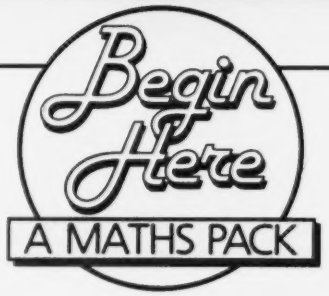
Multiplication Puzzle 2

Answer Sheet 2 — Cut into squares

54	6	20	42	18
15	10	35	12	42
40	48	36	45	56
5	28	24	25	7
30	70	50	21	14
35	63	60	49	30

Multiplication Puzzle 2

Answer Check Sheet 2



54	6	20	42	18
15	10	35	12	42
40	48	36	45	56
5	28	24	25	7
30	70	50	21	14
35	63	60	49	30

Multiplication Puzzle 3

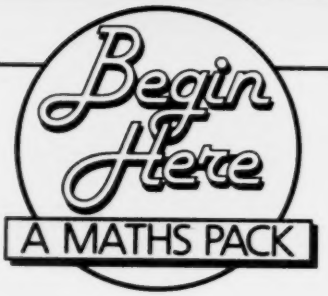
Begin Here
A MATHS PACK

This sheet represents the puzzle board

8 x 2	9 x 1	9 x 10	8 x 1	9 x 9
10 x 1	9 x 4	8 x 9	10 x 2	9 x 8
10 x 6	8 x 6	8 x 3	10x3	9 x 3
10x8	8 x 4	10x7	9 x 5	9 x 2
8 x 5	10 x 5	10 x 9	8 x 7	8 x 8
10x4	10x10	9 x 6	8x10	9 x 7

Multiplication Puzzle 3

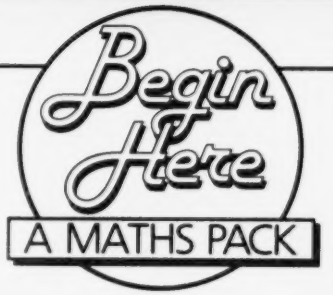
Answer Sheet 3 — Cut into squares



16	9	90	8	81
10	36	72	20	72
60	48	24	30	27
80	32	70	45	18
40	50	90	56	64
40	100	54	80	63

Multiplication Puzzle 3

Answer Check Sheet 3



16	9	90	8	81
10	36	72	20	72
60	48	24	30	27
80	32	70	45	18
40	50	90	56	64
40	100	54	80	63

Division Puzzle 1

This sheet represents the puzzle board

2÷2	28÷4	6÷2	15÷3	2÷1
18÷2	36÷4	4÷1	18÷3	1÷1
12÷2	4÷4	32÷4	6÷1	12÷3
16÷2	3÷1	4÷2	9÷3	5÷1
20÷2	21÷3	8÷2	12÷1	10÷2
30÷3	3÷3	40÷4	9÷1	8÷4
16÷4	7÷1	6÷3	8÷1	27÷3
14÷2	24÷4	10÷1	24÷3	20÷4

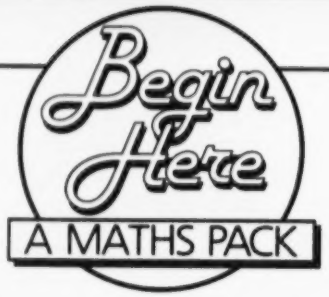
Division Puzzle 1

Answer Sheet 1 — Cut into squares

1	7	3	5	2
9	9	4	6	1
6	1	8	6	4
8	3	2	3	5
10	7	4	3	5
10	1	10	9	2
4	7	2	8	9
7	6	10	8	5

Division Puzzle 1

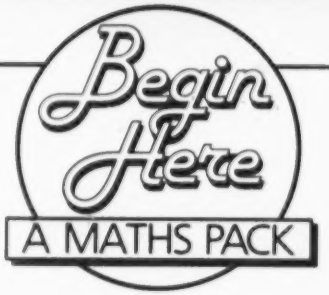
Answer Check Sheet 1



1	7	3	5	2
9	9	4	6	1
6	1	8	6	4
8	3	2	3	5
10	7	4	3	5
10	1	10	9	2
4	7	2	8	9
7	6	10	8	5

Division Puzzle 2

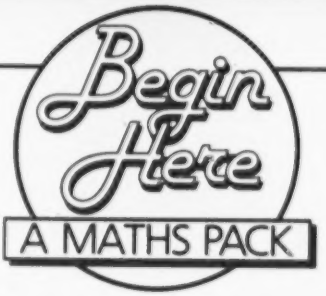
This sheet represents the puzzle board



5÷5	60÷6	35÷7	30÷6	15÷5
54÷6	28÷7	6÷6	10÷5	56÷7
21÷7	45÷5	12÷6	35÷5	42÷7
24÷6	70÷7	30÷5	20÷5	18÷6
7÷7	25÷5	42÷6	63÷7	36÷6
40÷5	14÷7	48÷6	49÷7	50÷5

Division Puzzle 2

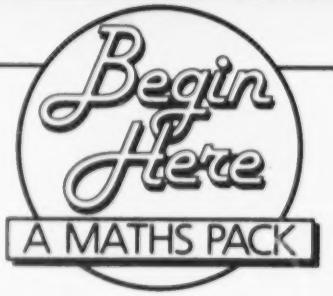
Answer Sheet 2 — Cut into squares



1	10	5	5	3
9	4	1	2	8
3	9	2	7	6
4	10	6	4	3
1	5	7	9	6
8	2	8	7	10

Division Puzzle 2

Answer Check Sheet 2

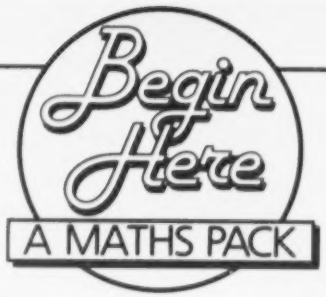


1	10	5	5	3
9	4	1	2	8
3	9	2	7	6
4	10	6	4	3
1	5	7	9	6
8	2	8	7	10

40

Division Puzzle 3

This sheet represents the puzzle board

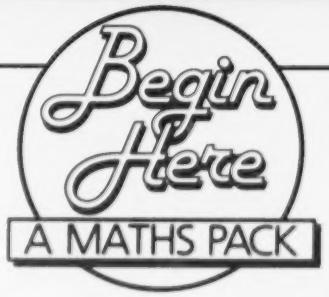


72÷8	50÷10	9÷9	64÷8	40÷10
63÷9	18÷9	81÷9	16÷8	30÷10
32÷8	90÷10	8÷8	100÷10	27÷9
40÷8	60÷10	90÷9	36÷9	24÷8
10÷10	72÷9	70÷10	80÷8	56÷8
54÷9	20÷10	45÷9	48÷8	80÷10

41

Division Puzzle 3

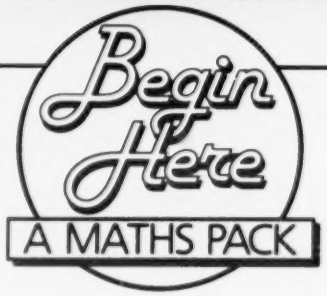
Answer Sheet 3 — Cut into squares



9	5	1	8	4
7	2	9	2	3
4	9	1	10	3
5	6	10	4	3
1	8	7	10	7
6	2	5	6	8

Division Puzzle 3

Answer Check Sheet 3



9	5	1	8	4
7	2	9	2	3
4	9	1	10	3
5	6	10	4	3
1	8	7	10	7
6	2	5	6	8

24 Hour Clock

Begin Here
A MATHS PACK

00.00 hrs. | 01.00 hrs. | 02.00 hrs. | 03.00 hrs. | 04.00 hrs.

05.00 hrs. | 06.00 hrs. | 07.00 hrs. | 08.00 hrs. | 09.00 hrs. | 10.00 hrs.

11.00 hrs. | 12.00 hrs. | 13.00 hrs. | 14.00 hrs. | 15.00 hrs.

16.00 hrs. | 17.00 hrs. | 18.00 hrs. | 19.00 hrs. | 20.00 hrs.

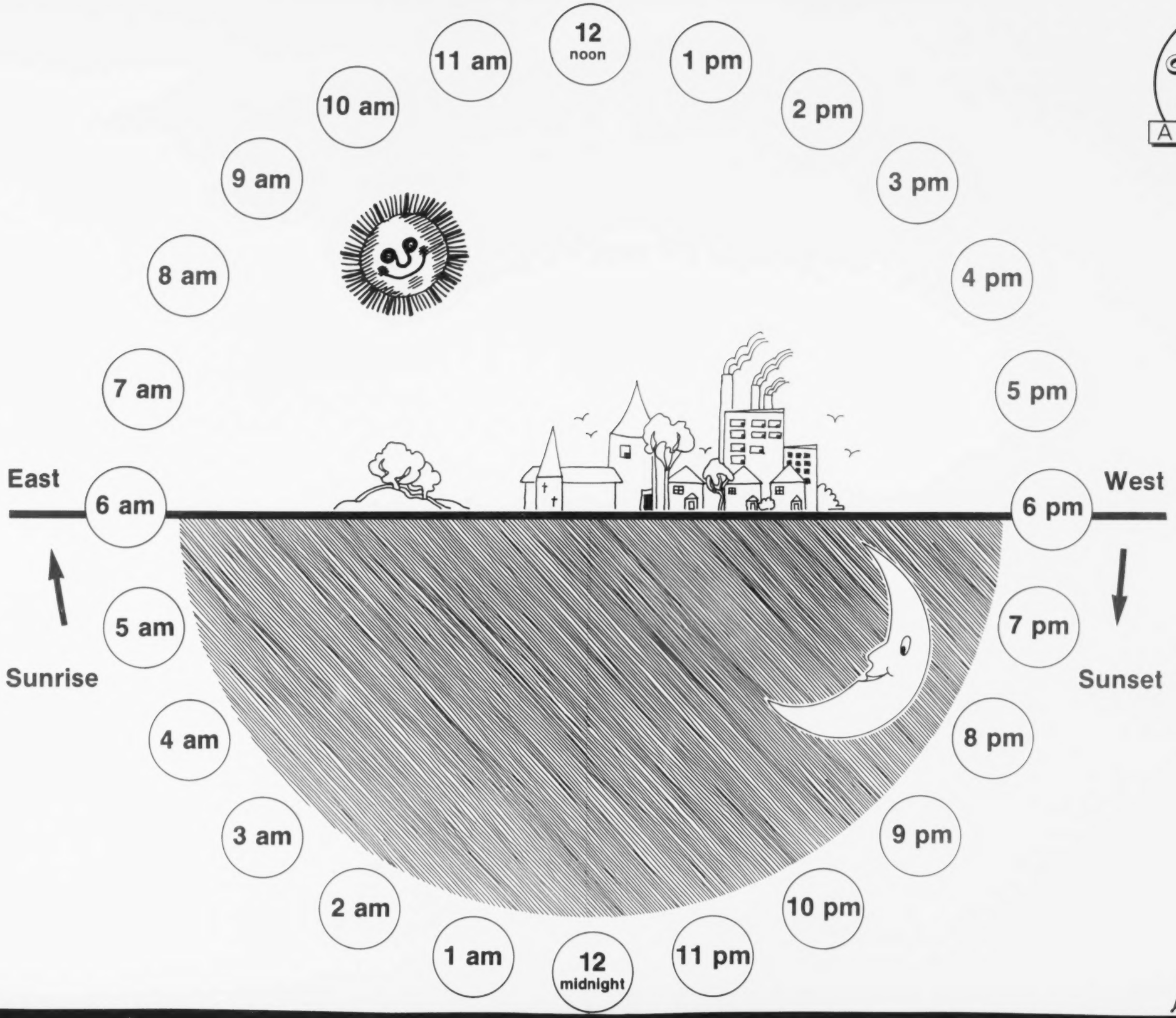
21.00 hrs. | 22.00 hrs. | 23.00 hrs. | 24.00 hrs.

This sheet is used in association with the A3 insert.

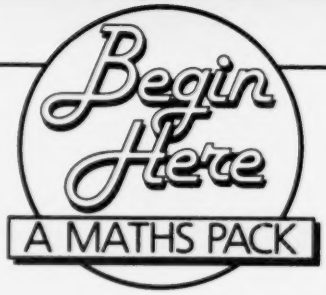
Cut out the small circles on this page. Students must then cover each time on the clock's face with the appropriate circle. As with all other games its life will be prolonged if, before cutting out, it is covered with transparent self-adhesive film. Colouring will improve the visual impact and basic students who may have limited manual dexterity can gain from, as well as enjoy, this activity. Night-time circles could be one colour and day-time circles another.

NB Do ensure that students don't inadvertently use a colour code, i.e. red circle on clock matches red small circle!

HH


12
noon
11 am
1 pm
10 am
2 pm
9 am
3 pm
8 am
4 pm
7 am
5 pm
East
6 am
6 pm
West
5 am
7 pm
Sunrise
Sunset
4 am
8 pm
3 am
9 pm
2 am
10 pm
1 am
11 pm
12
midnight

Personal Timetable



Students may make their own personal time-table as shown below.

They should work out the times themselves where possible and shade the hours when they were sleeping. 00.00 hours is a difficult concept but necessary when reading train or bus time-table.

Time		What I was doing yesterday
00.00 hrs	12 Midnight	
01.00 hrs	1 am	Asleep
02.00 hrs	2 am	Asleep
03.00 hrs	3 am	Asleep
04.00 hrs	4 am	Asleep
05.00 hrs	5 am	Asleep
06.00 hrs	6 am	Asleep
07.00 hrs	7 am	Alarm Ringing
08.00 hrs	8 am	Eating my breakfast
09.00 hrs	9 am	Arriving at college
10.00 hrs	10 am	Coffee Break
11.00 hrs	11 am	Woodwork
12.00 hrs	12 noon	Eating Lunch
13.00 hrs	1 pm	
14.00 hrs	2 pm	
15.00 hrs	3 pm	
16.00 hrs	4 pm	
17.00 hrs	5 pm	
18.00 hrs	6 pm	
19.00 hrs	7 pm	
20.00 hrs	8 pm	
21.00 hrs	9 pm	
22.00 hrs	10 pm	
23.00 hrs	11 pm	

Level 2

Begin Here
A MATHS PACK

This work is related to everyday life applications of the basic four rules and their extension into dealing with fractions, decimals and percentages.

All the worksheets are designed for use by students working individually. Tutors, however, will need to offer explanations and assistance where necessary.

The value $66\frac{2}{3}\%$ has been approximated to 66%. Some tutors may wish to change this to 67% or $66\frac{2}{3}\%$

f. Fractions Worksheet

Introducing fractions: addition, subtraction and multiplication by whole numbers.

g. Percentages

Introduction to percentages as so many out of a hundred, followed by percentage of a single object eg, a glass 50% full.

h. Equivalent fractions, decimals and percentages

The illustrations are intended to be adult orientated.

I. Dominoes

As with other games, before cutting out, stick onto card and cover with transparent self adhesive film. Colour coding may prove useful when sorting games out after use. Outline the dominoes with a different colour for each set before cutting out.

Sets are as follows:

a) **Fraction/decimal** for values 1, ½, ¼, ⅓

Fraction/% for values 1, ½, ¼, ⅓

Decimal/% for values 1, ½, ¼, ⅓

These may be used individually for two players or as one large game for up to 6 players. Play as ordinary dominoes but eg, match ½ to ½ or 0.5 or 50%.

b) **Advanced Game**

Play as above. This game is much more difficult having eleven values to match. A checklist is included.

j Percentages and Money

Introducing problems with money intended to help students cope with difficulties of life and work situations.

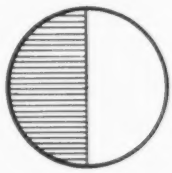
Fractions

Begin Here
A MATHS PACK

When you see a fraction don't panic — it is simply another way of writing a division sum (a "share-by")

One half (½) means one divided by two

Here is a circle divided into two:

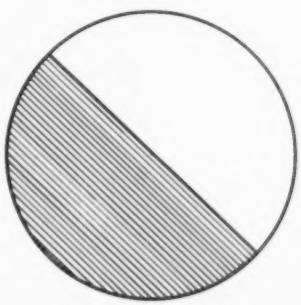


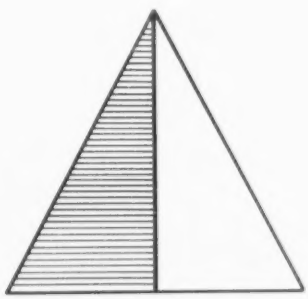
We can write one divided by two in different ways:

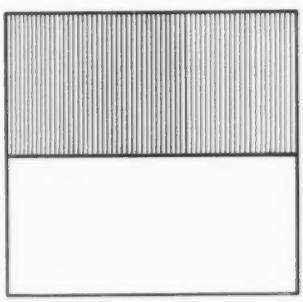
$\frac{1}{2}$ $\quad 2\overline{)1}$ $\quad 1 \div 2$ $\quad 2\overline{)1}$

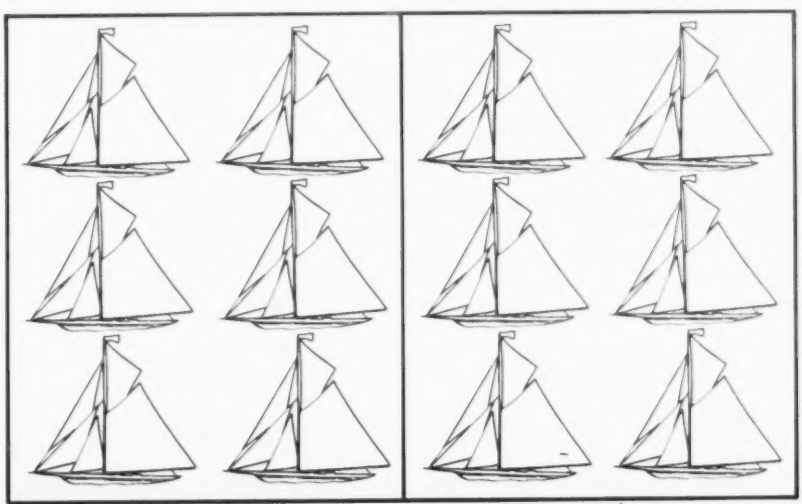
When we write it this way (½) it called a "fraction"

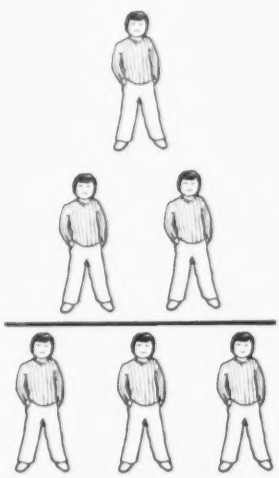
All these are halves. They have been divided into two equal parts.







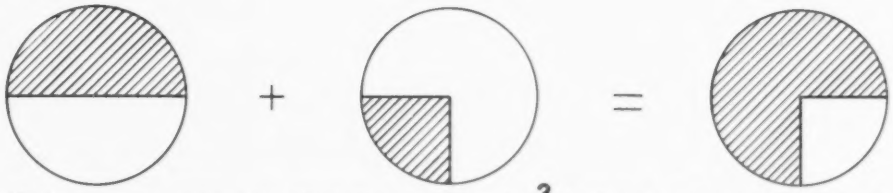




Adding Fractions

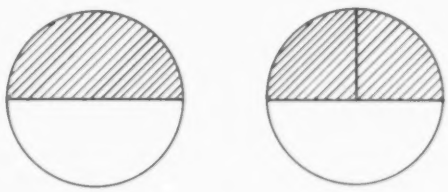
Begin Here
A MATHS PACK

$\frac{1}{2} + \frac{1}{4} =$



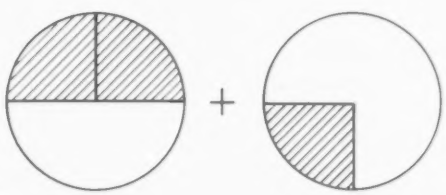
Perhaps you can see that the answer is $\frac{3}{4}$ but can we work that out without drawing pictures?

Can you see that $\frac{1}{2}$ is the same as $\frac{2}{4}$?



Now both fractions in our sum are made up of pieces which are the same size

$\frac{2}{4} + \frac{1}{4}$



This means that the bottom numbers (the denominators) are the same.

If you write the sum like this $\frac{2+1}{4}$ you can work out the answer

$$\frac{2+1}{4} = \frac{3}{4}$$

Adding Fractions

Begin Here
A MATHS PACK

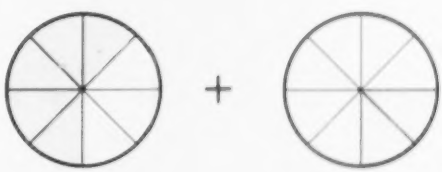
Now try these:

$\frac{1}{4} + \frac{1}{8} =$

$\frac{1}{2} + \frac{1}{6} =$

$\frac{1}{6} + \frac{1}{3} =$

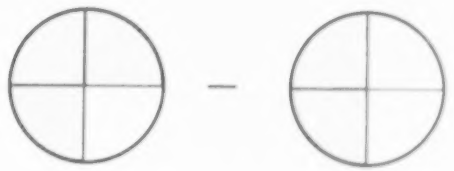
$\frac{3}{8} + \frac{1}{2} =$



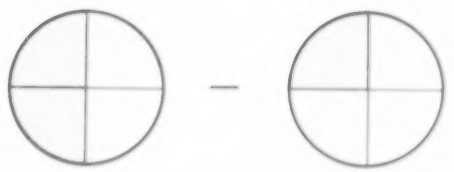
$\frac{5}{8} + \frac{1}{4} =$

Subtracting Fractions

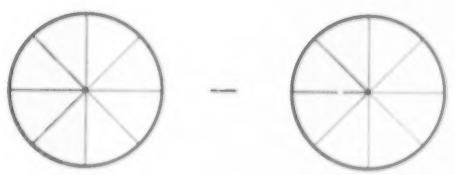
Now try to subtract (take away) these fractions using the same method.



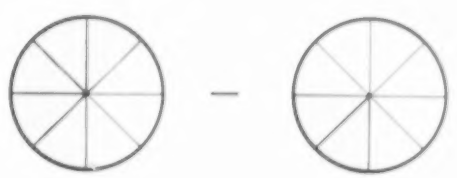
$\frac{3}{4} - \frac{1}{2} =$



$\frac{1}{2} - \frac{1}{4} =$



$\frac{1}{2} - \frac{3}{8} =$



$\frac{5}{8} - \frac{1}{4} =$

Multiplication of Fractions

Begin Here
A MATHS PACK

Here are three halves

Let's re-arrange them

Can you see — Three halves make $1\frac{1}{2}$

$3 \times \frac{1}{2} = 1\frac{1}{2}$

Here is another way to write it:

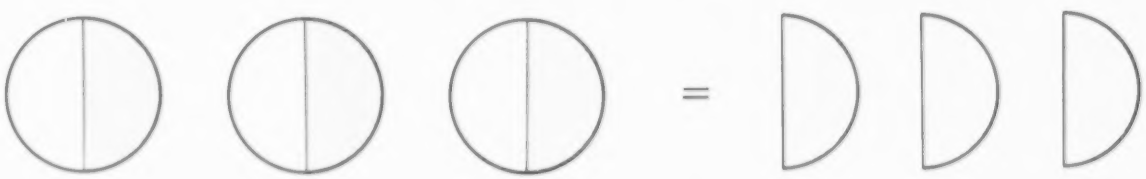
Half of three makes $1\frac{1}{2}$

$$\frac{1}{2} \times 3 = 1\frac{1}{2}$$

When you see the word "of" it means "times" or "multiplied by".

Let's check again with a diagram:

Half of three makes $1\frac{1}{2}$



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Percentages

Begin Here
A MATHS PACK

Understanding "Per Cent"

"Centum" is Latin for one hundred (100)

"Per cent" means out of a hundred. We write it like this "%"

Here are some words with **"cent"** in them:

1. **Centi**metre — a hundred of these make one metre
2. American money has 100 **cents** to the dollar
3. A hundred years is called a **cent**ury.

Can you think of some words containing "cent"?

Write them below:

When you see this: "%" **(per cent)** don't panic!

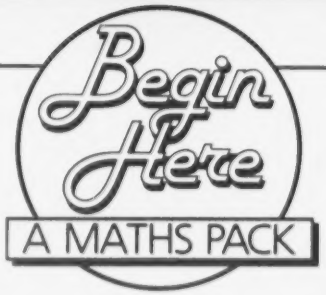
It simply means **"out of 100"**

1% means **one** out of a **hundred**

2% means **two** out of a **hundred**

50% means **50** out of a **hundred**

Percentages



How would you write **75** out of a **hundred?** .....

How would you write **30** out of **hundred?** .....

How would you write **82** out of a **hundred?** .....

How would you write **forty** out of a **hundred?** .....

How would you write **sixty-eight** out of **hundred?** .....

How would you write **fifty-five** out of a **hundred?** .....

36% means ..... out of hundred

96% means .....out of a hundred

25% .....out of a hundred

100 per cent also means one whole thing, even though it hasn't got 100 parts.

Let me show you what I mean: eg.

i. If you have a maths test (1 test) and there are 30 sums on the paper, and you get all the sums right:

$\frac{30}{30}$ = **1 whole test paper right**

You would be told your marks are 100%

ii. There are 25 students in your class. All of the students are in so we have a full class:

$\frac{25}{25}$ = **1 class = 100% attendance**

iii. A glass can hold 1 pint of liquid

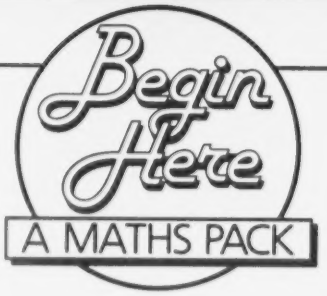
If you fill the glass it will be **100%** full

(1 whole glass)

iv. If you go to your doctors for a check-up and everything is OK, the doctor will say you are **100%** fit.

(1 person)

Percentages



Now look at the following and see if you can decide if they are whole **(100%)**

1. A box holds six eggs. You use two of them.
   Is the box 100% full?

Yes	No

2. A football team have a check-up before a match. They all pass as fit (11 players and 1 sub).
   Can the manager say he has 100% team fitness

Yes	No

3. In one family there are mum, dad and four children (1 family=6 people). At dinner-time dad is missing.
   Is the family complete?

Yes	No

4. We have 30 students in a class.
   3 of them are off ill.
   Do we have 100% attendance?

Yes	No

5. A packet hold 20 cigarettes.
   If you smoke 1 cigarette is the packet 100% full?

Yes	No

6. A tea set has six cups, six saucers and six plates, none of which is broken.
   Is the tea set 100% complete?

Yes	No

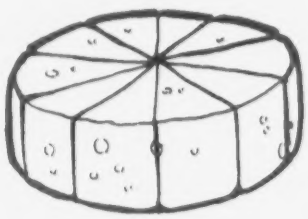
7. A bag can hold 2 pounds of sugar.
   If half of the sugar is used is the bag still 100% full?

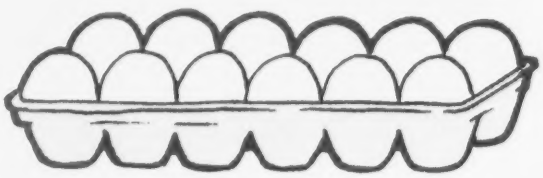
Yes	No

Equivalent Fractions, Decimals & Percentages

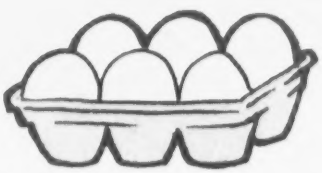
Begin Here
A MATHS PACK

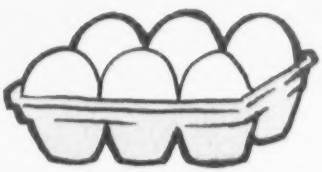
1 = 1·0 = 100%

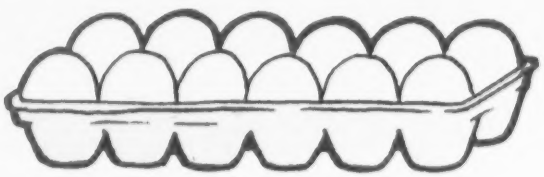




Which of these pictures is not **whole?**





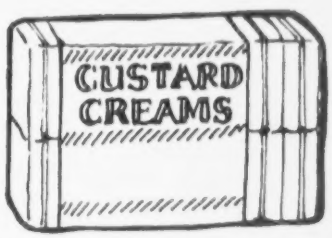


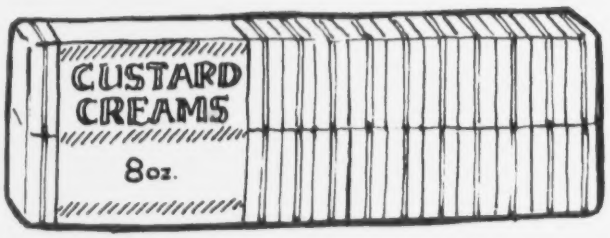
Are these egg boxes **100% full?**

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

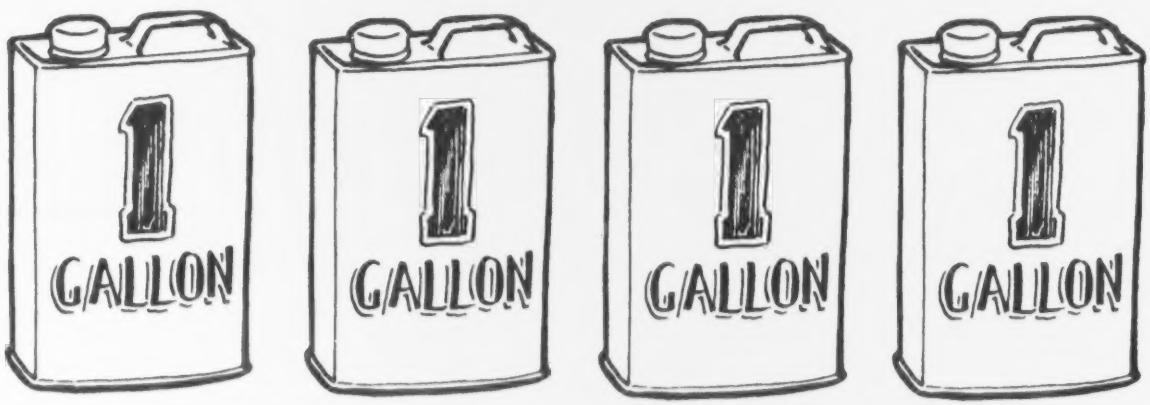
$$\frac{1}{2} = 0{\cdot}5 = 50\%$$





The small packet of biscuits is **half as heavy** as the large packet.

How much does it weigh?



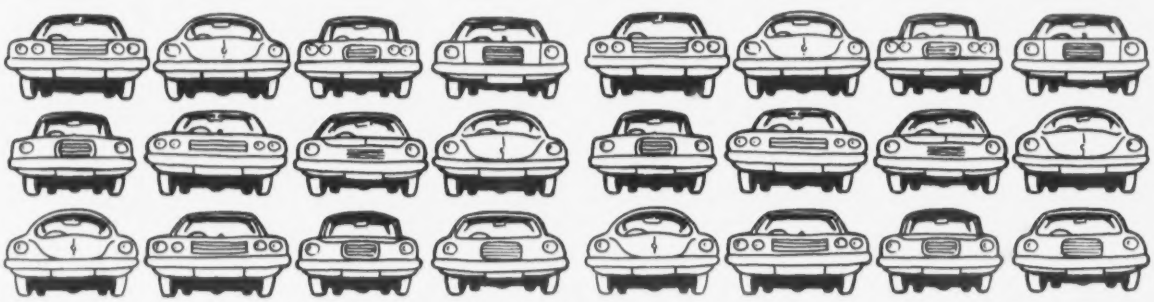
My car has run out of petrol!

If I put **50%** of this petrol into it, how much will that be?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

$$\frac{1}{4} = 0{\cdot}25 = 25\%$$



$\frac{1}{4}$ of these cars have got a flat tyre.

How many is that?

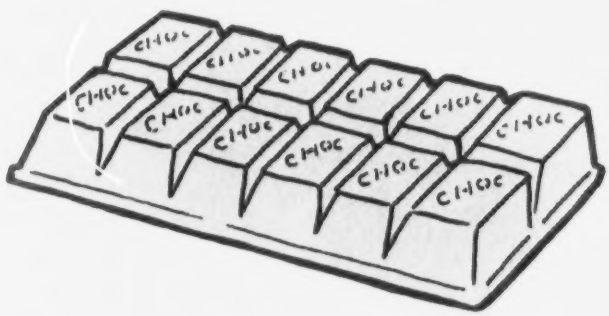
I must cut down my smoking!

If I only smoke **25%** of these cigarettes how many will that be?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

$$\frac{3}{4} = 0{\cdot}75 = 75\%$$



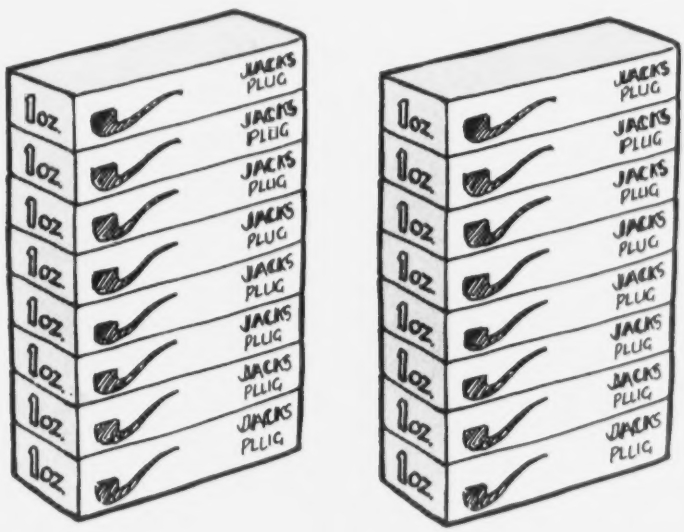
I feel very hungry. If I eat $\frac{3}{4}$ of this chocolate how many squares will that be?

If I eat **75%** of these beans, how many will be gone?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

$$\frac{1}{8} = 0{\cdot}125 = 12\frac{1}{2}\%$$



The shop only has this tobacco left.

If I buy $\frac{1}{8}$ of it how much will that be?

This pile of potatoes weighs 100 lbs.

How much will **$12\frac{1}{2}\%$** of the pile weigh?

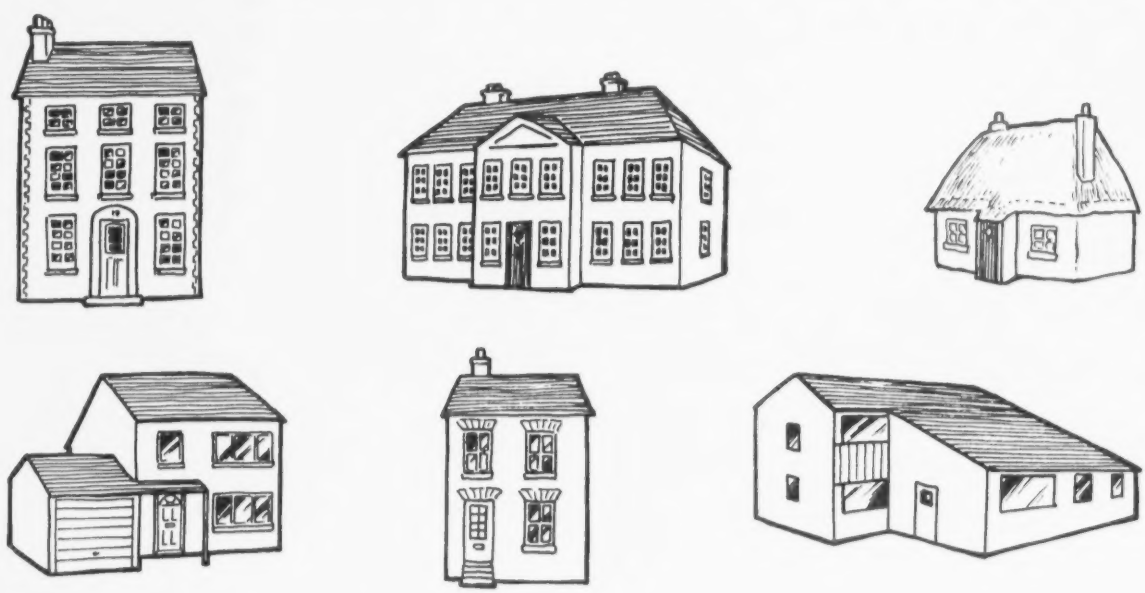
Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

$$\frac{1}{3} = 0{\cdot}33 = 33\frac{1}{3}\%$$

1 pint 1 pint 1 pint

If I drank $\frac{1}{3}$ of this beer how much would I have drunk?



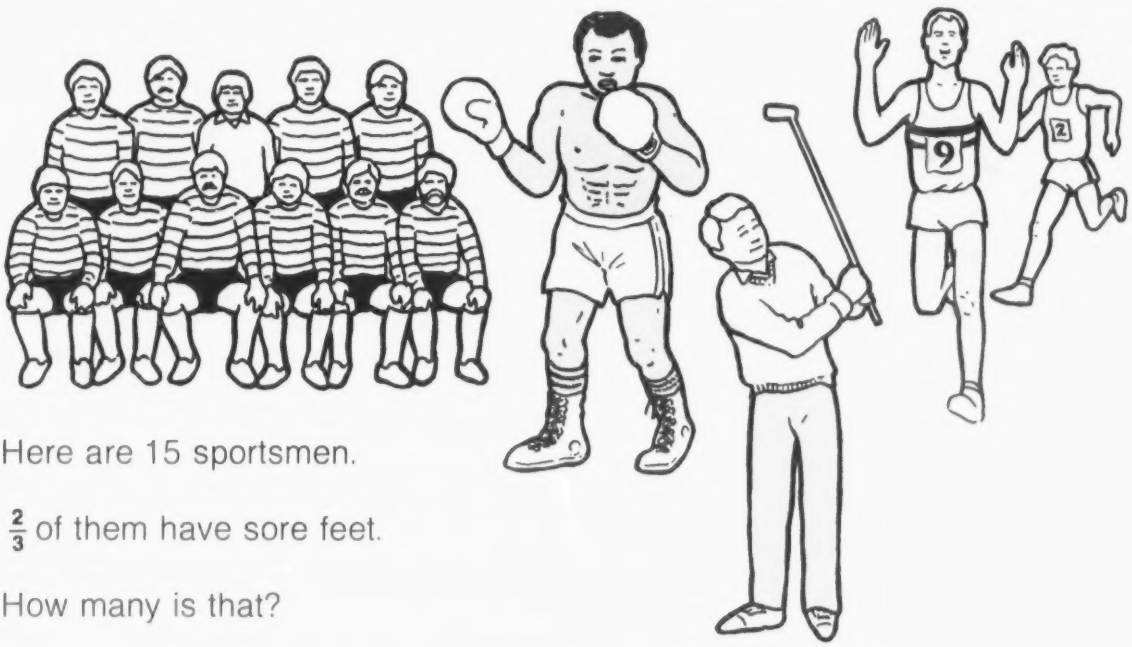
$33\frac{1}{3}\%$ of these houses have double glazing.

How many is that?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

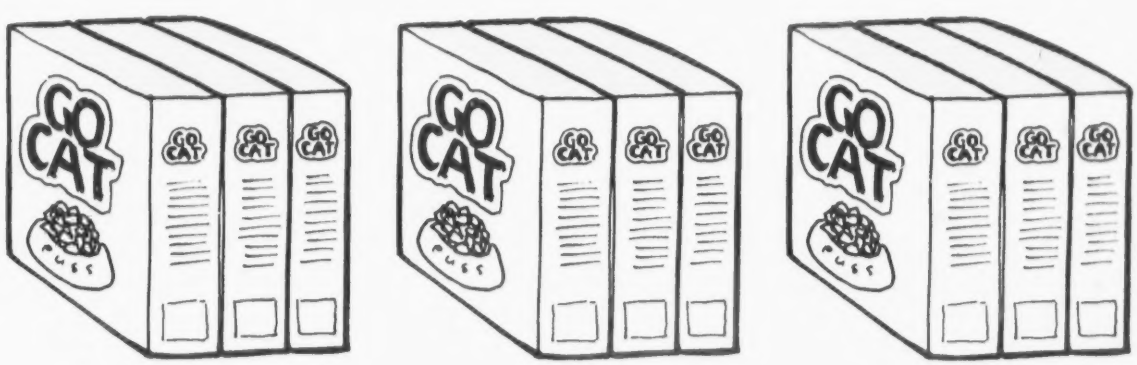
$$\frac{2}{3} = 0{\cdot}66 = 66\frac{2}{3}\%$$



Here are 15 sportsmen.

$\frac{2}{3}$ of them have sore feet.

How many is that?



If I buy **$66\frac{2}{3}\%$** of this cat food, how much will I have to buy for my hungry moggy?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

$$\frac{1}{5} = 0{\cdot}2 = 20\%$$

If I buy $\frac{1}{5}$ of the oil shown in this picture, how much oil will I have?

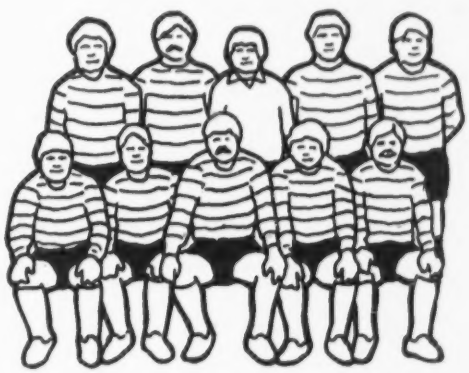
20% of the coins in this picture were minted in 1980.

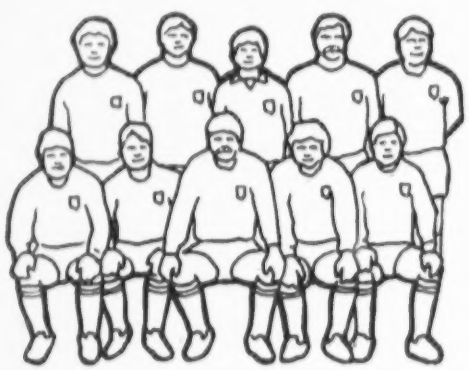
How many is that?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

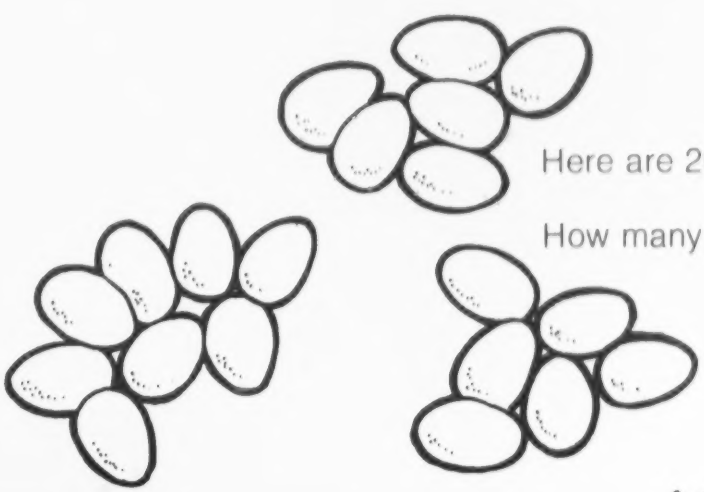
$$\frac{1}{10} = 0{\cdot}1 = 10\%$$





Here are 20 footballers. $\frac{1}{10}$ of them have a hangover.

How many is that?



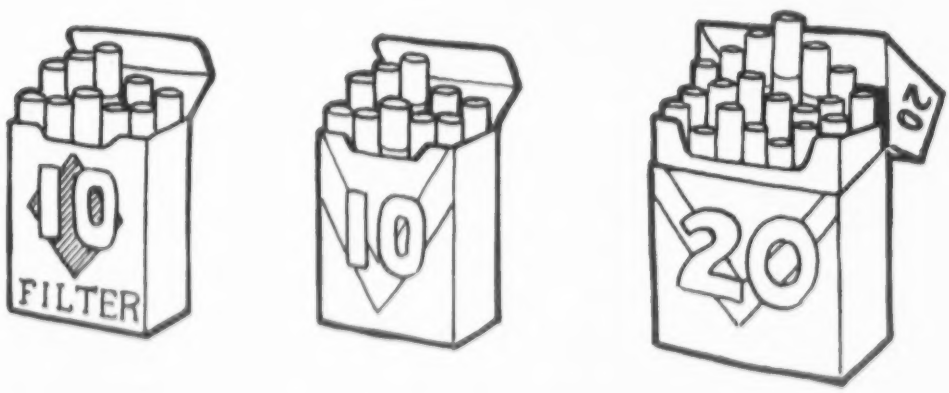
Here are 20 eggs. **10%** of them are bad.

How many must I throw away?

Equivalent Fractions, Decimals & Percentages

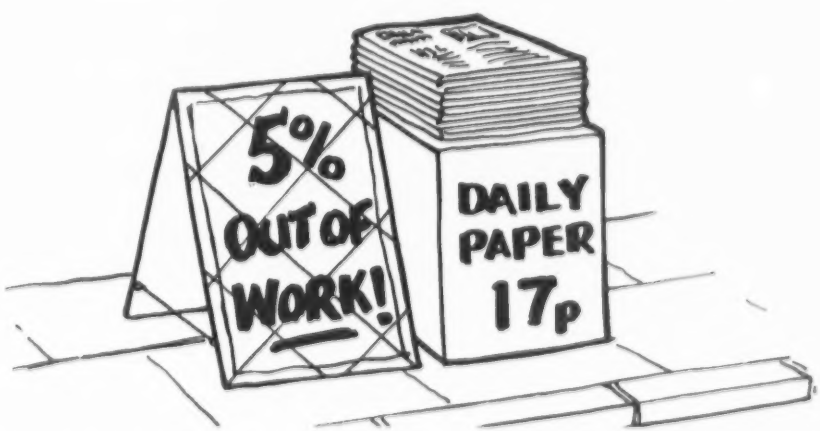
Begin Here
A MATHS PACK

$$\frac{1}{20} = 0{\cdot}05 = 5\%$$



Here are 40 cigarettes. My friend wants $\frac{1}{20}$ of them.

How many shall I give him?



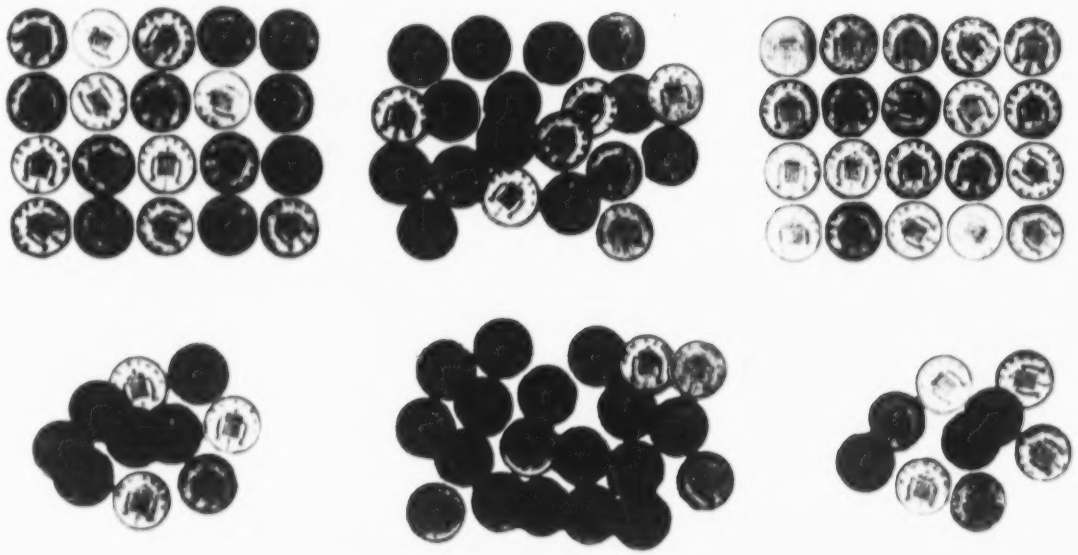
500 people worked at this factory. Now **5%** have lost their jobs.

How many is that?

Equivalent Fractions, Decimals & Percentages

Begin Here
A MATHS PACK

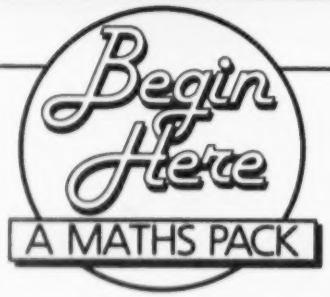
$$\frac{1}{100} = 0{\cdot}01 = 1\%$$



Here are 100 pennies. If I take $\frac{1}{100}$ of them, how many will I have left?

What is **1%** of £1?

Checklist



Fraction	Decimal	Percentage
1	1.0	100%
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{1}{8}$	0.125	$12\frac{1}{2}$%
$\frac{1}{3}$	0.33	$33\frac{1}{3}$%
$\frac{3}{4}$	0.75	75%
$\frac{2}{3}$	0.66	$66\frac{2}{3}$%
$\frac{1}{5}$	0.2	20%
$\frac{1}{10}$	0.1	10%
$\frac{1}{20}$	0.05	5%
$\frac{1}{100}$	0.01	1%

Fractions/Percentages Dominoes

Begin Here
A MATHS PACK

$33\frac{1}{3}\%$	$\frac{1}{3}$
25%	$\frac{1}{3}$
100%	$\frac{1}{4}$
50%	$\frac{1}{4}$
25%	$\frac{1}{4}$
33%	$\frac{1}{4}$
50%	$\frac{1}{3}$
100%	$\frac{1}{2}$

50%	$\frac{1}{2}$
25%	$\frac{1}{2}$
$33\frac{1}{3}\%$	$\frac{1}{2}$
100%	$\frac{1}{3}$
100%	1
50%	1
25%	1
$33\frac{1}{3}\%$	1

Decimals/Percentages Dominoes

50%	0.5
100%	0.5
50%	0.33
$33\frac{1}{3}\%$	1.0
25%	1.0
50%	1.0
100%	1.0
0.33	100%

$33\frac{1}{3}\%$	0.33
$33\frac{1}{3}\%$	0.25
25%	0.25
50%	0.25
100%	0.25
25%	0.33
$33\frac{1}{3}\%$	0.5
0.5	25%

Fractions/Decimals Dominoes

Begin Here
A MATHS PACK

$\frac{1}{2}$	0.5
$\frac{1}{2}$	0.25
$\frac{1}{2}$	0.33
$\frac{1}{3}$	0.33
1	1.0
1	0.5
1	0.25
1	0.33

$\frac{1}{3}$	1.0
$\frac{1}{3}$	0.5
$\frac{1}{4}$	1.0
$\frac{1}{4}$	0.5
$\frac{1}{4}$	0.25
$\frac{1}{4}$	0.33
$\frac{1}{3}$	0.25
$\frac{1}{2}$	1.0

Dominoes Level 2

50%	25%	10%	5%	1%	100%	10%	5%
$\frac{1}{100}$	0.01	$\frac{2}{3}$	$\frac{1}{5}$	$\frac{1}{10}$	$\frac{1}{20}$	0.75	0.66
1%	100%	50%	$12\frac{1}{2}\%$	$33\frac{1}{3}\%$	75%	$66\frac{2}{3}\%$	20%
0.2	0.1	0.05	1.0	0.5	0.25	0.125	0.33

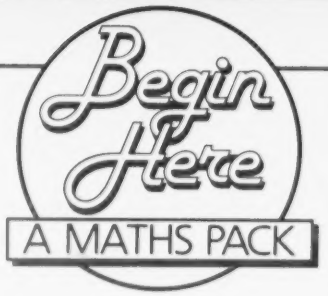
Begin Here
A MATHS PACK

Dominoes
Level 2

0.2	$\frac{2}{3}$
0.66	$\frac{3}{4}$
75%	$\frac{1}{8}$
$33\frac{1}{3}\%$	$\frac{1}{4}$
$12\frac{1}{2}\%$	$\frac{1}{2}$
25%	1
20%	$\frac{3}{4}$
$66\frac{2}{3}\%$	$\frac{1}{3}$
$\frac{1}{100}$	1.0

0.75	$\frac{1}{3}$
0.33	$\frac{1}{8}$
0.125	$\frac{1}{4}$
0.25	$\frac{1}{2}$
0.5	1
0.01	$\frac{1}{20}$
0.05	$\frac{1}{10}$
0.1	$\frac{1}{5}$

Percentages & Money



We often use percentages when we are dealing with money.

Luckily there are 100 pennies in a pound.

So: **1%** of **£1** = **1p**

Can you see why?

1% of **100** = **1**

So: **1%** of **100 pence** = **1 penny** So: **1%** of **£1** = **1p**

2% of **£1** = **2p**

5% of **£1** = **5p**

75% of **£1** = **75p**

Now try these:

19% of **£1** = ... **78%** of **£1** = ...

25% of **£1** = ... **83%** of **£1** = ...

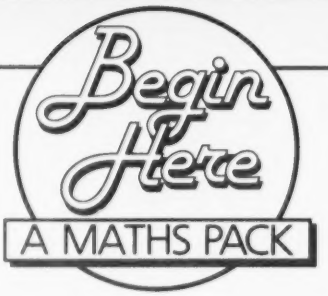
68% of **£1** = ... **16%** of **£1** = ...

82% of **£1** = ... **19%** of **£1** = ...

93% of **£1** = ... **33%** of **£1** = ...

64% of **£1** = ... **42%** of **£1** = ...

Percentages & Money



Now change the following amounts to percentages of £1

1. **75p** = ...% of a pound
2. **83p** = ...% of a pound
3. **91p** = ...% of a pound
4. **50p** = ...% of a pound
5. **13p** = ...% of a pound
6. **98p** = ...% of a pound
7. **45p** = ...% of a pound
8. **33p** = ...% of a pound
9. **25p** = ...% of a pound
10. **15p** = ...% of a pound

Now we know that **1%** of **£1** = **1p**

Can you see that **1%** of **£2** = **1p x 2** = **2p**

1% of **£6** = **1p x 6** = **6p**

We multiply (times) these together to get the answer

Now try these:

1. **1%** of **£8** = ...
2. **1%** of **£13** = ...
3. **1%** of **£16** = ...
4. **1%** of **£98** = ...
5. **1%** of **£50** = ...
6. **1%** of **£75** = ...
7. **1%** of **£33** = ...
8. **1%** of **£27** = ...
9. **1%** of **£17** = ...
10. **1%** of **£69** = ...

Percentages & Money

2. A dress shop has this sign in the window:

15% off all skirts

You see a skirt costing £8

a) How much will the discount be? .....

b) How much will you have to pay? .....

3. A bike is being sold at ½ price which is £25

a) What is the saving as a %? .....

b) What was the original cost of the bike? .....

4. A fridge costs £95

You can get 10% discount if you pay cash

a) How much would you save? .....

b) How much would you have to pay? .....

5. Aunty Brenda gets a rise at work. It is worth 10%

a) If she earns £50 per week, how much extra money will she get? .....

b) How much will she be earning altogether? .....

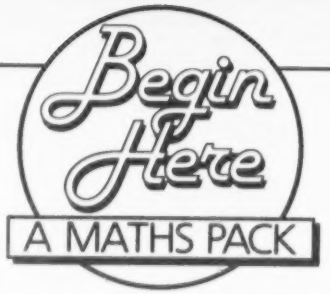
6. In the butchers, steak is £2 a pound; but if you had a freezer and could buy 10 pounds of steak you would get 20% discount for bulk buying

a) How much would it cost if you brought steak on ten different shopping trips at 1 pound on each trip? .....

b) What would you save by buying in bulk (10 pounds in one trip)?
.....

c) What would be the % saving? .....

Percentages & Money



Remember

3% of **£1** = **3p**

So **3%** of **£2** = **3p x 2** = **6p**

3% of **£4** = **3 x 4p** = **12p**

We multiply these together to get the answer.

Now try these:

1. **4%** of **£5** = ...
2. **6%** of **£2** = ...
3. **15%** of **£3** = ...
4. **2%** of **£11** = ...
5. **20%** of **£4** = ...
6. **11%** of **£5** = ...
7. **10%** of **£18** = ...
8. **10%** of **£25** = ...
9. **5%** of **£80** = ...
10. **5%** of **£90** = ...

Now try these problems

1. A radio costs £33

   Discount is 10%

   a) How much will the discount be? .....

   b) How much will you have to pay? .....

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